

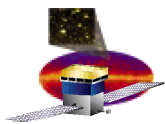


GLAST Large Area Telescope Calorimeter Subsystem 2.0 Management

**W. Neil Johnson
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Calorimeter Subsystem Manager**

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(202)-767-6817**

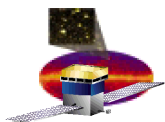




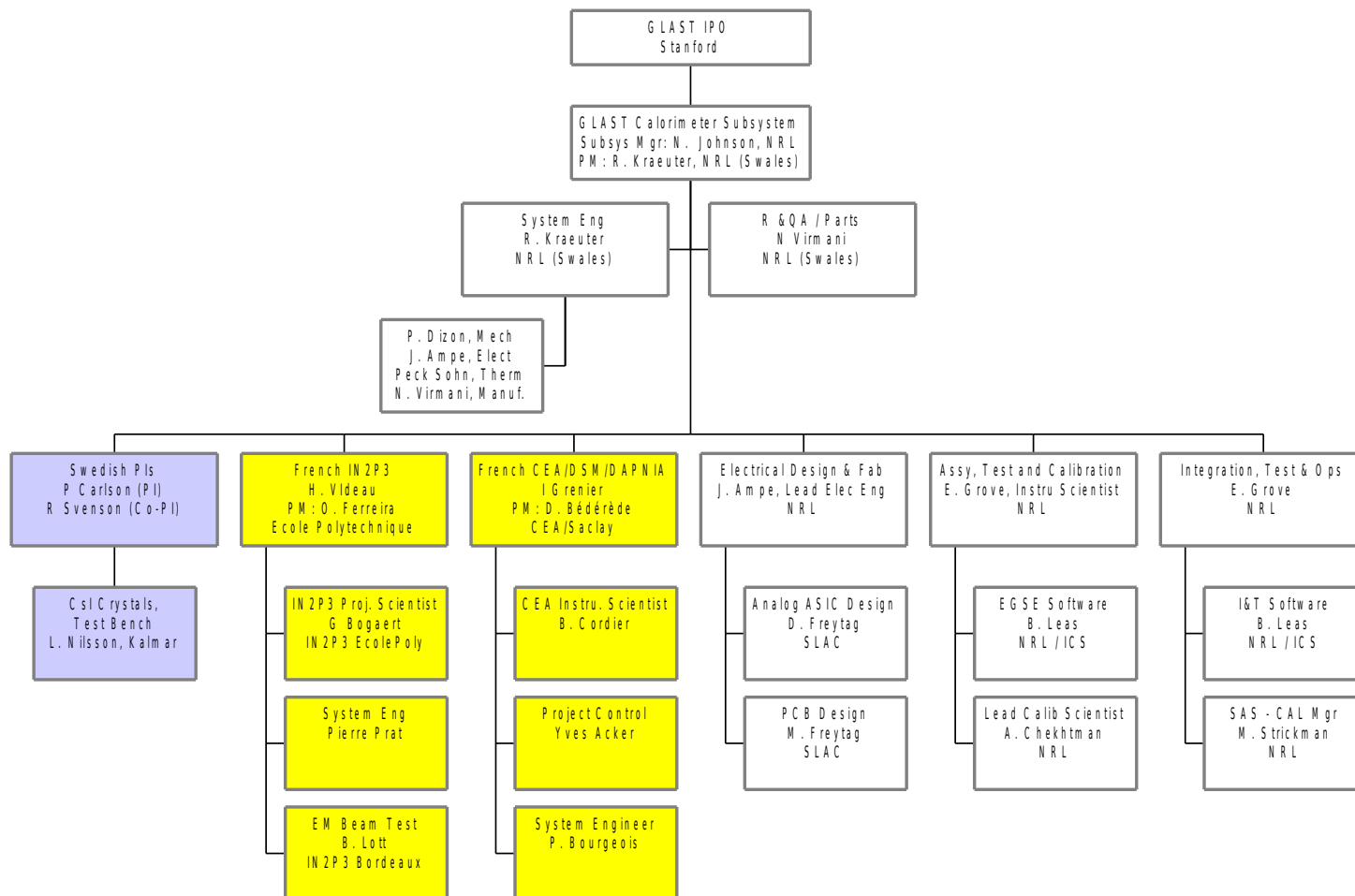
Outline

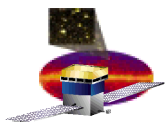
- ❑ **Organization**
- ❑ **Work Flow / Fabrication Plan**
- ❑ **Schedule Summary**
- ❑ **Critical Path Analysis**
- ❑ **Procurements**





Calorimeter - Institutional Organization

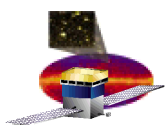




CAL Subsystem WBS

4.1.5.1	Calorimeter Program Management and Administration	NRL	N. Johnson
4.1.5.2	Systems Engineering	NRL	R. Kraeuter
4.1.5.3	Reliability and Quality Assurance	NRL	N. Virmani
4.1.5.4	Calorimeter Design	NRL	E. Grove
4.1.5.5	Csl Crystal Detector Elements (CDE)	NRL	R. Kraeuter
	4.1.5.5.1 CDE design	NRL	N. Johnson
	4.1.5.5.2 Csi(Tl) Scintillation Crystals	KTH Sweden	P. Carlson
	4.1.5.5.3 Dual PIN photoDiode (DPD)	NRL/CEA	N. Johnson
	4.1.5.5.4 Dual PIN Photodiode Interconnect	CEA/NRL	D. Bedere
	4.1.5.5.5 CDE I&T	CEA-Saclay	D. Bedere
	4.1.5.5.6 CDE Bonding Study	NRL	R. Kraeuter
4.1.5.6	Pre-Electronics Module (PEM)	NRL	P. Dizon
	4.1.5.6.1 PEM Structure Fabrication & Test	IN2P3	O. Ferreira
	4.1.5.6.2 PEM Assembly & Test	NRL	E. Grove
4.1.5.7	Analog Front End Electronics	NRL	J. Ampe
4.1.5.8	Calorimeter Tower Controller	NRL	J. Ampe
4.1.5.9	Calorimeter Module Assembly, Test & Calibration	NRL	E. Grove
4.1.5.A	Instrument I&T Support	NRL	E. Grove
4.1.5.B	S/C Integration Support	NRL	E. Grove
4.1.5.C	Mission Operations Support	NRL	E. Grove





Calorimeter Work Flow

Dual PIN
Diodes
(DPD)
NRL/CEA

CsI
Crystals
Sweden
(KTH)

Element (CDE)
Assembly
France
(CEA/DAPNIA)

Mechanical Structure
France (IN2P3/Ecole
Polytechnique)

Front-End
Electronics
NRL, SLAC

PIN Diode
(each end)

Bond

CsI Crystal

End Cap

Wire
leads

1728

16 Flight modules + 1 Qual + 1
Spare

W. N. Johnson

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PreElectronics Module
(PEM) Assembly
NRL

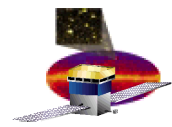
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Module Assembly
and Test,
NRL+collab

Naval Research Lab
Washington DC

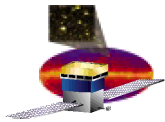




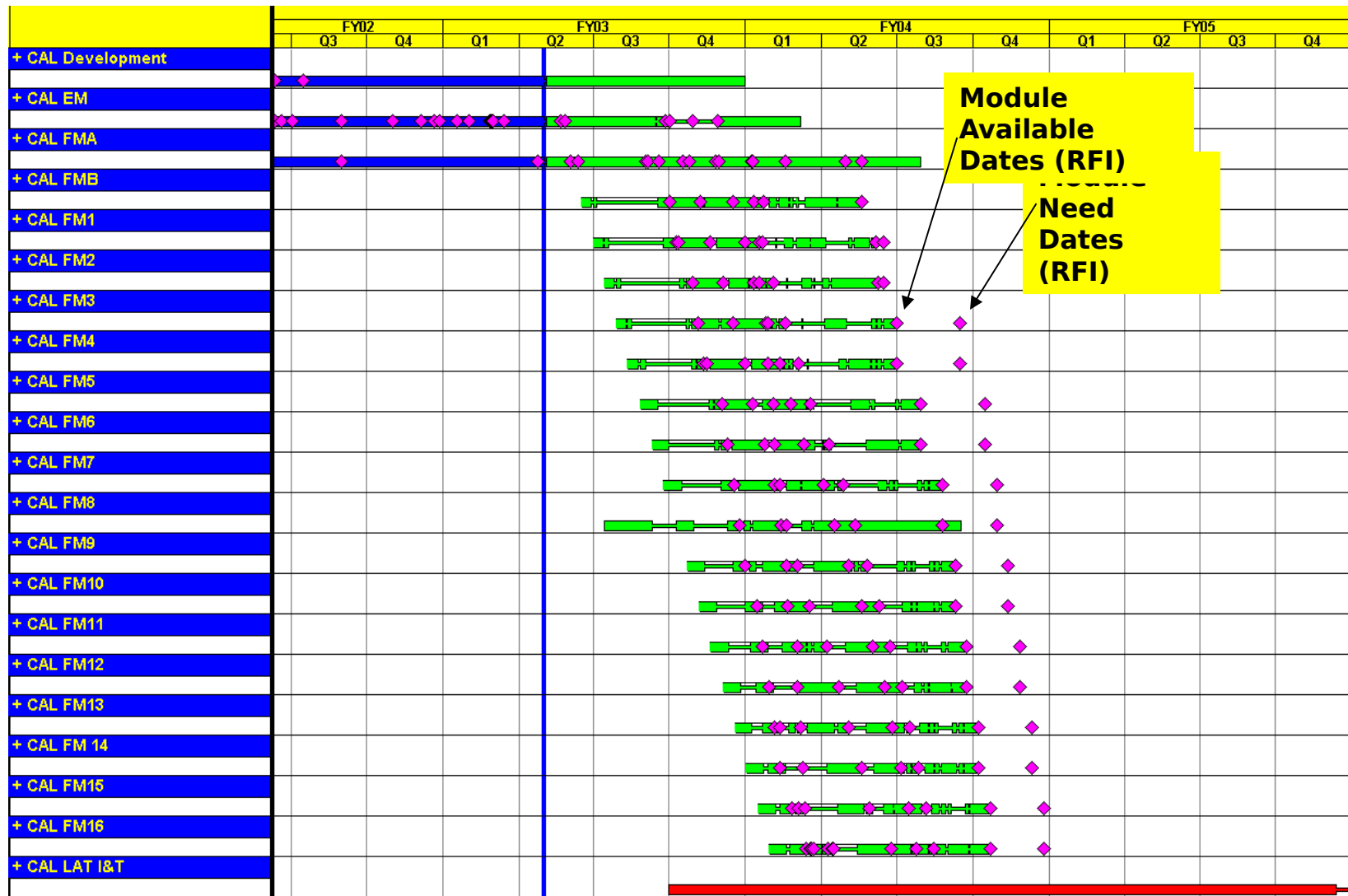
CAL Hardware Collaborators

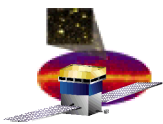
Organization	Responsibility
Naval Research Lab	CAL Subsystem Management & System Engineering Safety & Mission Assurance, Subsystem Design PIN photodiode spec and shared procurement CAL Electronics Design & Fab, Digital ASIC design, CAL Module Assy & Test, LAT I&T Support
SLAC	CAL Analog ASIC Design AFEE PCB layout
Sweden	CsI Crystal procurement and acceptance test
France / CEA	Crystal Detector Element design, fabrication and test Part of PIN photodiode procurement, PIN Diode assembly procurement, PIN-CsI bonding, CsI optical wrap.
France / IN2P3	Mechanical Structure design and fabrication Carbon composite cell structure. Al baseplate and closeout shells, elastomer bumpers and cords. Finite element and thermal analyses. Beam Test Planning and Support



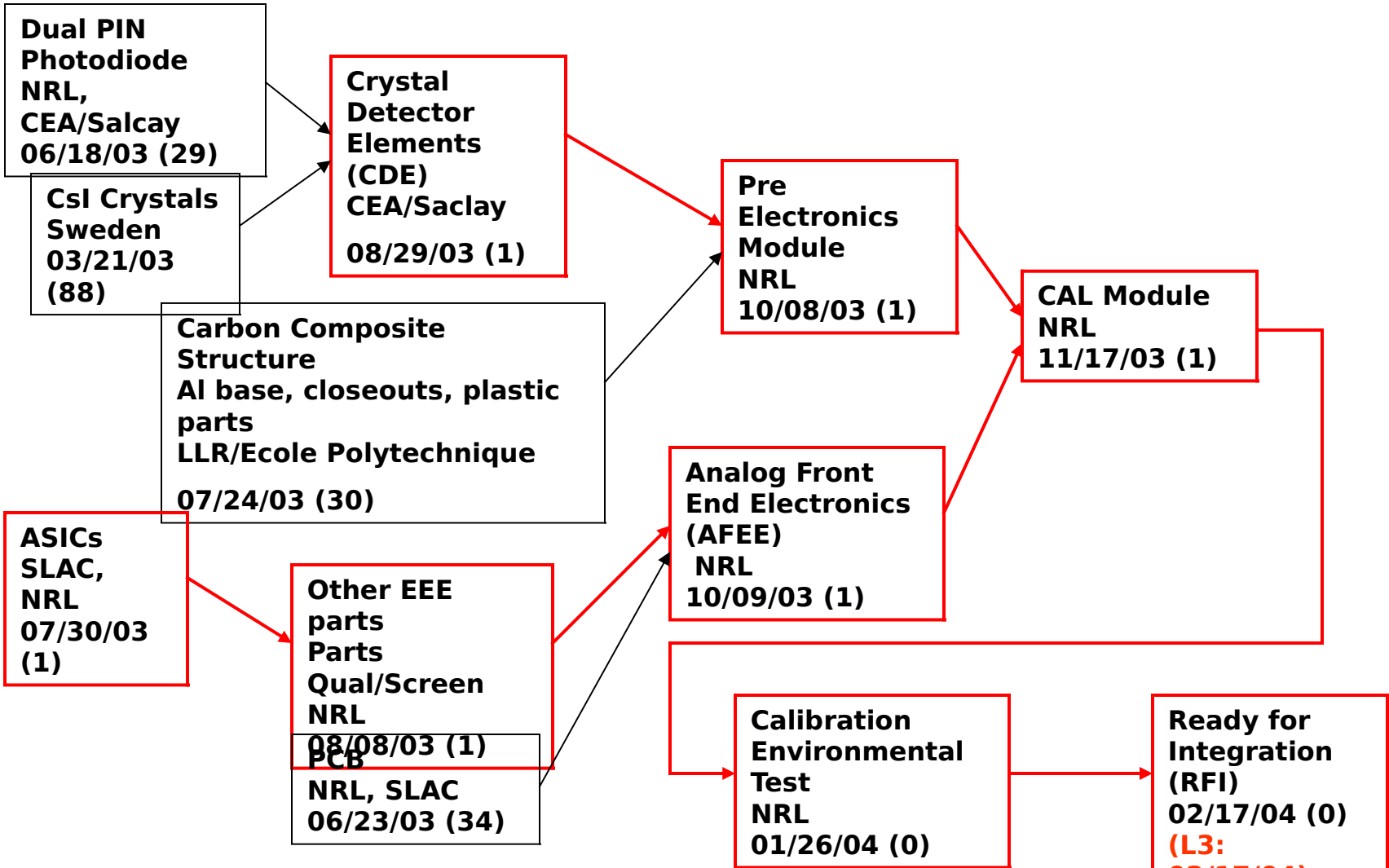


CAL Summary Schedule





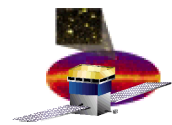
CAL Qual Module (FMA)



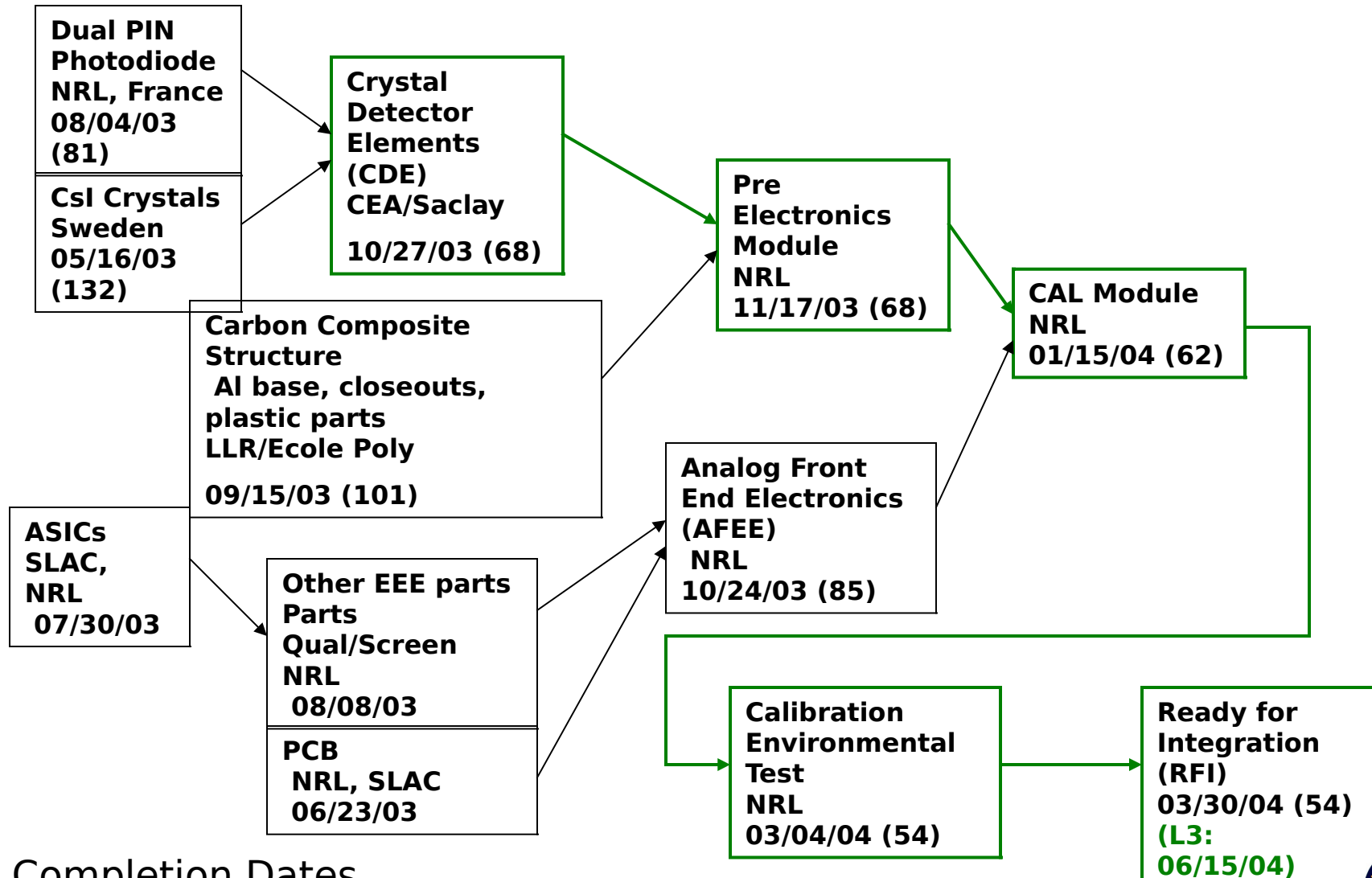
Completion Dates
(float)

W. N. Johnson





CAL Flight Module 3



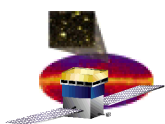
Completion Dates
(float)

W. N. Johnson

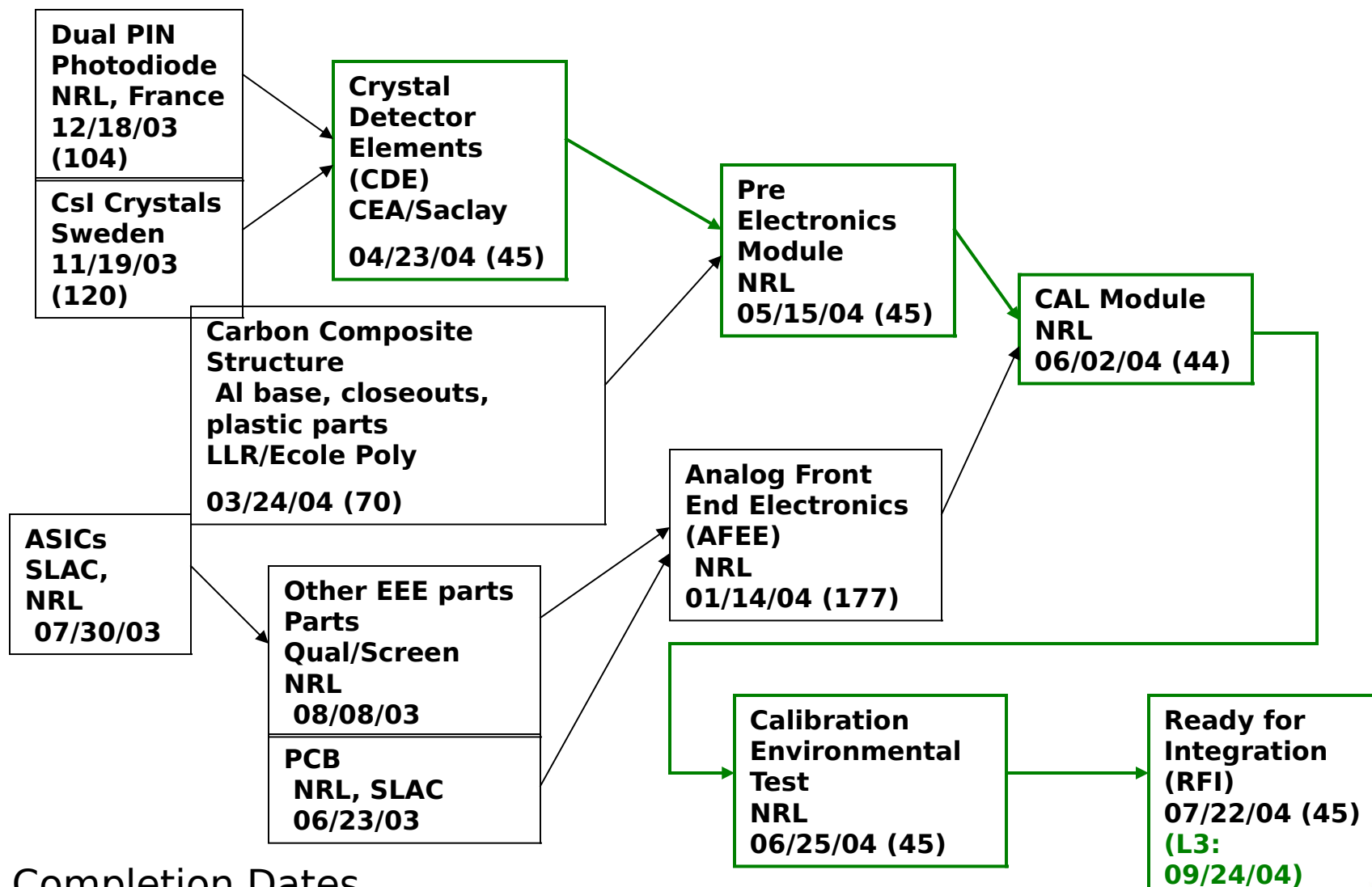
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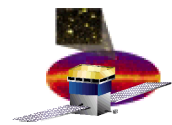
Naval Research Lab
Washington DC





CAL Flight Module 16

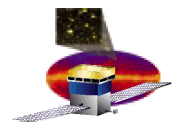




CAL Procurements

Vendor	Element
Amcrys-H (Ukraine)	CsI(Tl) crystal elements Procurement in place by Sweden for all CAL CsI (~2000 crystals or 1640 kg) 240 prototypes in hand for Eng Model. Delivery rate: 200 crystals/month, 1 st deliveries March '03
Hamamatsu Photonics	Custom Dual PIN Photodiode NRL and France / CEA shared procurement 600 Design prototypes in hand for Eng Model. Spec for flight version diodes completed, 184 prototypes have been procured. Flight procurement has been initiated: ~4800 diodes Delivery rate: 600 / 4 weeks. 1 st deliveries June '03
3M Corporation	VM2000 Reflective Film (CDE Optical Wrap) Prototype in hand for EM and qualification testing. Approved for flight use.

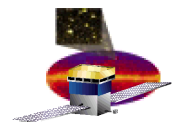




CAL Procurements (2)

Vendor	Element
Competitive (France)	CDE Manufacturing - bonding & wrapping Request for proposals is out. Selection expected end of May. Delivery rate: 108 CDE/two weeks, 1 st deliveries end of Aug '03
Competitive (France)	PIN Photodiode Assembly Request for proposals is out. Selection expected end of May. Delivery rate: 240 PDA/two weeks, 1 st deliveries Aug '03
Competitive (France)	Mechanical Structure components Alum. machined parts, elastomeric parts, carbon prepreg. Prototypes in hand for EM and qualification testing. Selection process is underway, waiting for released flight drawings. 1 st delivery June '03





CAL Procurements (3)

Vendor	Element
MOSIS / ASAT	ASIC manufacturing and packaging. Prototypes in hand for EM and qualification testing. Flight ASICs have been submitted for production. Packaging procurement in process. Need date: July '03
Maxim Integrated Products	COTS ADCs and DACs NRL Procurement for all LAT subsystems has been initiated. Avail May '03 Prototypes in hand for EM and qualification testing. Flight: 10,000 ADCs (MAX145), 1000 DACs (MAX5121)
QML Vendors	EEE Parts/ Circuit Boards / Board Assembly All parts have been approved except qualification needed for connectors and plastic encapsulated parts. Ready for procurement.

